



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

formal committee, composed of a number of distinguished scientific and practical men, made an investigation and published a report. In this they completely exonerated the schoolmaster of prompting the horse by intentional signals, and stated the opinion that unintentional signals of known sorts were absent. From this last statement the public promptly inferred that the committee meant to say that the horse did his own thinking, disregarding the remaining possibility that his behavior was regulated by unintentional signs of a sort as yet unknown.

At this point a systematic experimental attack upon the problem was begun by Professor Stumpf and his pupils which presently led to Dr. Pfungst's discovery of the set of minimal unconscious movements of the body and head by which the horse was set to tapping and again stopped at the number required. Once discovered, Dr Pfungst was able not only to execute these movements voluntarily (like the others who were able to get replies from the horse he had been executing them long unconsciously before he discovered them) and so lead the horse to any reply to any question, but he was able also to guide others to the observation of them in all those who succeeded in getting replies from the horse, and finally to demonstrate on a number of subjects in the laboratory similar and equally unconscious movements.

With this clue it was possible to explain in detail all the essential phenomena observed, even to the characteristic 'blunders' and 'mistakes' of the horse, and to give a natural explanation of how such a system of unconscious signalling by the master and of response by the horse could have grown up in the course of such "education" as the horse had received at the hands of Herr von Osten.

The explanation is doubtless absolutely correct and yet who would have ventured beforehand that differences in attention could explain so much — the delicate responsiveness of the horse to the movements of his master when his securing of bread and carrots depended upon it, and the obliviousness of the master to these same movements when his thoughts were otherwise engaged. The study is, all in all, a model in its field, and ought to be promptly translated into English.

For the details the text itself will, of course, be consulted. It includes, besides the six chapters of Dr. Pfungst, an introduction by Professor Stumpf, four appendices (on Herr von Osten's method of teaching, the report of the above mentioned committee, extracts from its protocol, and the final report made by Professor Stumpf in December, 1904) and a bibliography of 124 titles. E. C. S.

*Are Bees Reflex Machines?* An Experimental Contribution to the Natural History of the Honey Bee, by H. v. Buttell-Reepen, Ph. D. Translated by Mary H. Geisler. The A. I. Root Co., Medina, Ohio, 1907. pp. 48.

It is a pleasure to welcome, in an English version, this account of bee psychology by a German master of it. The work appeared first as a series of papers in the *Biologisches Centralblatt*, Vol. XX, 1900, as a counter blast to Bethe's stimulating but inadequate studies of ants and bees (Bethe: *Dürfen wir Ameisen und Bienen psychische Qualitäten zuschreiben?* *Pflüger's Archiv*, LXX, 1898), but is controversial only in presenting vividly the contrary facts. The work is full of interesting first hand observation with abundant references to literature and cannot fail, in its present form, to be useful to English students of bee behavior.

The difficulties and defects of psychological terminology are considerable at the best, but in comparative psychology they stand out in all their enormity. Hardly anywhere else would one meet in the same

paragraph a pair of sentences like the following: "On the basis of my observations I am of the opinion that bees possess either no consciousness at all, or one of only the lowest degree of development." . . . "We see that bees show signs of an admirable memory in their orientation, and also in other activities; further, I believe I have shown that the bee possesses a perception for color and form, and develops a rich capacity for communication . . . that, further, it is able to gather experience, to learn, and to form associations of impressions, etc." It is perhaps fair to say that Dr. v. Buttell gives us warning elsewhere that he does not always mean as anthropomorphic as he says.

The printing of the work in this English edition leaves not a little to be desired. Lines five inches long in type as fine as that used in the body of the pages is none too easy to read, and when it becomes still finer type in the footnotes it offers positive difficulties. E. C. S.

*Biology and Its Makers*, by WILLIAM A. LOCY, Ph. D., Sc. D. Henry Holt & Co., New York, 1908. pp. 469.

In this work Professor Locy of Northwestern University has given to the educated public an untechnical but scholarly account of the rise and present status of biology and its problems. The book will be welcomed both for its contents and straightforward, thoughtful style by students, clergymen, teachers, medical men, and all interested in the achievements of modern science. At the same time the broad outlook over the whole biological field,—comparative anatomy, embryology, histology, etc.,—the comprehensiveness and continuity of the work, its clear statement of problems, its excellent table of contents, index, and bibliography up to date will commend it to the specialist. For those who know a little about biology and wish to know more Professor Locy's volume is positively fascinating. One finds the theory of organic evolution fully and adequately treated, to be sure, but in its right setting as part of the orderly development of a great science. The cell theory, the discovery of protoplasm, the rise of bacteriology, and of the science of fossil life, and recent controversies in reference to germinal continuity and the inheritance of acquired characteristics are all presented in their just relation. The generous amount of biographical material, the portraits and other illustrations, and Professor Locy's appreciation of and almost religious respect for the great leaders of scientific thought are sure to make his book of very great educational significance. This work emphasizes the zoölogical rather than the botanical side of biological science as indeed might be expected by all familiar with the research work of the author.

Northwestern University.

W. LIBBY.

*La Mano. Appunti antropometrici et antropologici*, del Dott. E. AUDENIO. Rivista Sperimentale di Freniatria e Medicina legale delle Alienazione mentale, Settembre, 1907. Vol. 33, pp. 416-429.

The author of this article is an assistant of Professor Lombroso at the psychiatric and neuropathological clinic at Turin, and summarizes a number of previous studies of the hand as well as giving the results of his own investigations. The palmar lines of various simians have been studied by Alix, Andreoli, Morselli, Carrara and others, and certain characteristic longitudinal, and in some species, transverse lines, have been made out. In man, these transverse lines tend normally to become more oblique, but both they and the longitudinal lines appear as atavistic phenomena. Dott. Audenio compared the frequency with which these lines appear in normal man, in cretins, insane patients and epileptics with the following results: In normal man about 21% of the hands examined (87 men and 13 women) showed more or less complete longitudinal lines, the frequency being greater